SCIENCE & GOVERNMENT REPORT

The Independent Bulletin of Science Policy

Vol. VI, No. 21 | P.O. Box 6226A, Washington, D.C. 20015 | December 15, 1976

Stever Giving Carter a Legacy He May Not Want

While the Carter transition team reports that it is still a considerable distance from decisions on the middle-level echelons where most research-related positions are located, the newly established White House Office of Science and Technology Policy (OSTP) is furiously setting up various committees and panels, some of which bear long-term charters.

The situation is an odd one, since the function of these groups is mainly to work closely with the president's science adviser, a post that Carter will fill with his own handpicked appointee, as yet unannounced. But without any visible motion on that selection, or even the first contact between Carter's transition staff and OSTP, there has been no opportunity for presidential Science Adviser H. Guyford Stever to consult with the incoming administration.

FDA Seeks Closer Review On Drug Testing—Page 3

Stever could, of course, hold off on setting up the advisory apparatus that is mandated in the legislation that created his office. But an element of personal pride enters the picture: When no one else deemed suitable wanted the job, he reluctantly took it late in the Administration, but he insisted that he would not be a mere seat warmer, though he intends to be out before inauguration day. As a result, a lameduck Administration is laying foundations that might easily confront Carter with a bit of a problem. The selections for the OSTP apparatus — based on Stever's appointments or recommentations to the President — include some people who would not likely be Carter choices. But if Carter bounces them out, the result will be one of those raucous flaps about political interference with scientific independence. Editorial writers will speculate on Lysenkoist tendencies in the new Administration, and Carter will be confronted with a controversy of little substance but much noise and potential for public confusion.

The rush to fill out the advisory organization began in September with the appointment of the President's Committee on Science and Technology, which, as specified under the legislation that created OSTP, is to conduct a broad, two-year inquiry into national science policy, including a Carter favorite, organization and possible reform thereof (SGR Vol. VI, No. 18). To head that Committee, Stever recommended, and Ford appointed, two longtime Republicans, Simon Ramo, a top executive of TRW, Inc., as chairman, and William O. Baker, president of Bell Labs, as vice chairman.

Both are longtime advisers to the federal government and have served as advisers in Democratic and Republican Administrations. Neither is rabidly partisan, and both are well-acquainted with the territory that the Committee is to examine. Their co-chairmenship of a committee for the re-election of Nixon in 1972 may properly be considered water under the bridge by the Carter camp. But if Carter is serious about the consumer orientation that he says he intends to bring to government, it may be difficult to pass over the fact that both hail from massive corporations and tend to regard a lot of recently adopted consumer-protection legisla-

(Continued on Page 2)

In Brief

The search for who's in charge of what on the Carter transition team leads to one Alfred Stern when the topic is "science." Stern, a Ph.D. in philosophy who holds a joint appointment in the divisions of natural science and humanistic studies at Wayne State University, is a senior policy adviser on the transition staff's Policy Development and Analysis Section, and covers HEW, foreign policy, and agriculture, "plus science." He told SGR, "Science is well-structured and poses no big problems" — which accounts, he said, for its low priority on the busy transition schedule.

The nuclear-power industry is chortling over the outcome of six statewide votes in November on measures that would, in one way or another, have restricted nuclear developments. The combined tallies were 5.1 million against the initiatives, 2.5 million for. In addition, there was last June's California vote, with 3.9 million against, and 4.5 million for.

The controversy over research on recombinant DNA will be discussed March 7 in Washington at a public Academy Forum sponsored by the National Academy of Sciences. The meeting will be co-chaired by David Hamburg, president of the Institute of Medicine, and Alexander Rich, of MIT. For additional information, contact Academy Forum, 2101 Constitution Ave. N.W., Washington, DC 20418. Telephone (202) 389-6305.

...Lame Duck Appointments Made By the Dozen

(Continued From Page 1)

tion as needless impediments to technological progress.

The Committee, whose membership includes Edward E. David Jr., who served for two years as Nixon's science adviser, is off and running, having held an organizational meeting last month. As things now stand, it will be in full operation as the government's principal inquiry into the national research enterprise when the Carter Administration takes office. The Committee, numbering 10 members, includes two who served on the oldtime President's Science Advisory Committee during the Johnson Administration — Charles Townes and Charles Slichter, both physicists — but whatever can be said about the ideological flavor of the overall group, it is not the one that Carter was projecting during the campaign. Since the legislation specifies a membership of 8 to 14, Carter can add some of his own choices.

Another group that has recently come into existence under the OSTP legislation is the Federal Coordinating Council for Science, Engineering and Technology (FCCSET). Since this is a kind of sub-cabinet of senior federal R&D officials, the membership is linked to particular positions and will change with their occupants. Many, in fact, are almost certain to change, since they are at the assistant secretary level, an echelon that is in the realm of presidential prerogative. Nevertheless, on December 2, with 49 days to go in an Administration that is rapidly sinking into catalepsy, Stever announced not only the appointment of 13 federal officials to the Council, but also creation of 10 subcommittees to deal with "six current National problem areas in science, engineering and technology" and "four related R&D policy management areas."

With most of the members either looking for jobs or angling to hold on to the ones they've got, opportunities to contribute to national wellbeing during the last few weeks of the Ford Administration may be doubted. And when Carter arrives with his own science adviser, it may be assumed that the Council will await that appointee's word as to what it should do.

Nevertheless, Stever accompanied appointment of the Council with the following buoyant proclamation: "The committees that have been adopted by the FCCSET will, I think, provide a very positive and strong framework for reviewing and resolving a host of exciting issues that must be met in the late 1970s. The structure recognizes the scientific advances that bring many disciplines closer together, and it gives much-needed attention to areas of Federal R&D activity where there has been substantial development — for example, in civilian-mission agency research and development."

Still another last-minute fleshing out of the OSTP operation took place with the appointment of the Intergovernmental Science, Engineering and Technology Advisory Panel, which held its first meeting December 7. The Panel, which is chaired by Stever in his capacity as head of OSTP, is supposed to assist state and local authorities in using science and technology to deal with public problems. Membership consists of 16 state and local officials, plus the Director of the National Science Foundation. With both parties and most regions well represented on the Panel, it will probably have little difficulty in meshing with the new administration.

But since it is chaired by the President's science adviser, and he is the one who sets its agenda and provides staff for its operations, it is difficult to see why a lameduck adviser felt it necessary to get the Panel going during the interregnum. No harm in doing so, but then again, little purpose, which can also be said about the rest of the pell mell rush to start up an operation without consulting the president whom it is intended to serve. —DSG

NSF Program Guide

National Science Foundation Guide to Programs (NSF 76-33), which tells what NSF is supporting and how to get in on it, is available without charge (for single copies) from Central Processing Section, NSF, 1800 G St. N.W., Washington, DC 20550. Additional copies, at $1.35 each, are available from the US Government Printing Office, Washington DC, 20402. GPO orders should use Stock No. 038-000-00294-5.

Contributing Editors
Colin Norman, Pamela Moore

Editor and Publisher
Daniel S. Greenberg
European Correspondent
Michael Kenward (London)

Circulation Manager
Alice Anne Freund

Independently published by *Science & Government Report*, Inc., twice monthly, except once each in January, July and August. Annual Subscription: Institutions, $75 (two years, $140); individuals, $44 (two years, $75). Editorial offices at 3736 Kanawha St., N.W., Washington, DC 20015. Tel. (202) 244-4135. Second class postage paid at Washington, DC. Please address all subscription correspondence to Box 6226A, Northwest Station, Washington, DC 20015.

Fraud Reports Spur New FDA Test Regulations

Following revelations that some drug companies have faked the results of toxicity tests on drugs and food additives and presented misleading reports to the federal government, the Food and Drug Administration (FDA) has proposed a set of regulations that would give it unprecedented authority to control the pharmaceutical industry's laboratory practices.

Though the proposed regulations are relatively strict —the Pharmaceutical Manufacturers' Association is wailing that they would give FDA "vast authority" over the drug industry — there is some doubt that they will be sufficient, by themselves, to keep the industry honest.

There is little doubt that tough federal action is needed, however. In a preamble to the proposed regulations, FDA Commissioner Alexander M. Schmidt, who has just left the government, said that a number of recent investigations of "major pharmaceutical firms" and "several private contract testing facilities" have turned up a slew of alarming incidents in animal tests of drugs and other products.

The investigations have uncovered examples of shoddy, even fraudulent, testing. Animals have been recorded as normal for a variety of factors, such as awareness, appetite and appearance, when "in fact the animals were dead." In cases where pathologists disagreed over the interpretation of results, only the opinion favorable to the test compound was reported to FDA. In one case, FDA was told that tissue samples had been examined when in fact laboratory records indicated that no samples were even taken. And "pathology reports submitted to the agency were inconsistent with the original autopsy records," Schmidt charged.

In addition to those incidents, a fullscale FDA investigation of testing records at the G.D. Searle Company, conducted between mid-1974 and May 1976, has turned up equally disturbing examples of questionable practices.

The Searle investigation was triggered by allegations that the company had presented misleading test reports on a widely prescribed drug known as Flagyl. The investigating team's final report concluded that "we have uncovered serious deficiencies in Searle's operations and practices which undermine the basis for reliance on Searle's integrity in conducting high quality animal re-

(Continued on Page 4)

ERDA Foresees Huge Costs for Nuclear Waste Disposal

Though a bitter dispute has been raging for years about the problem of how to get rid of wastes from commercial nuclear reactors, little public discussion has so far been devoted to an even greater nuclear disposal problem: what to do with the large amounts of radioactive material already accumulated from the production of nuclear weapons.

At a press conference held by the Energy Research and Development Administration on December 2, ERDA officials acknowledged that by 1980, the military nuclear program will have generated some 8 million cubic feet of wastes, compared with 20,000 cubic feet from commercial reactors. By the year 2000, the accumulated wastes will total 11 million from the military and 330,000 from commercial plants.

The military wastes are now in solution in storage tanks located at ERDA facilities in South Carolina, Idaho, and Washington. Before disposal they will have to be solidified (the quantities quoted above are for solidified material), fused into an insoluble mass, and transported to burial sites. The cost of that operation over the next 25 years, according to Frank P. Baranowski, head of ERDA's waste disposal program, could run to $20 billion.

In addition, it will cost some $2.5 billion to construct and operate permanent burial facilities for military wastes. As many as three separate facilities, nearly twice as many as required for commercial wastes, will be needed to accommodate the stuff, ERDA officials reckon. (The military wastes have less radioactivity per unit volume than commercial wastes, which allows more material to be stored at each site.)

The cost of constructing and operating disposal facilities for commercial wastes will be about $2 billion between now and the end of the century. Though there will be sufficient waste generated in that time to fill only about one and a half facilities, ERDA hopes to have six in operation by the year 2000. The idea is to spread the sites around the country to reduce transportation, and to have plenty of backup space available in case unforseen problems require wastes to be removed from one site and deposited in another.

The press conference was called to generate some good press for ERDA's diligence in its search for suitable burial sites. ERDA officials seemed a bit embarrassed, however, when reporters persisted in asking about the dimensions of the military waste problem.

...But Shortage of Toxicologists Hampers Reform

(Continued From Page 3)

search to accurately determine or characterize the toxic potential of its products." The report recommended that the matter be turned over to a grand jury for investigation of possible violations of the law.

Such incidents and allegations are particularly alarming since they cast doubt on a central factor in FDA's regulation of drugs and food additives. FDA has to rely on industry-supplied toxicity data for most of its decisions on proposed new compounds, and if the data are faked or otherwise unreliable, FDA's decisions may rest on shaky foundations. Data derived from animal tests are especially important since long-term animal feeding is the only means available to determine whether a drug or food additive may cause cancer or birth defects.

When allegations of industry misdeeds began to surface a few months ago, Senator Edward Kennedy (D-Mass.) held a series of public hearings with his Senate Health Subcommittee. As a result of the wide publicity given to the hearings, Congress subsequently appropriated $16.4 million to allow FDA to conduct a broad investigation of the pharmaceutical industry's testing procedures. The proposed regulations published by FDA are part of that effort.

They would set standards for all phases of laboratory testing of potential drugs and food additives, including training of personnel, maintenance of facilities and equipment, quality assurance, record keeping, and reporting. They would also give FDA the right to conduct inspections to ensure that the standards are being met.

In the next few weeks, FDA inspectors will visit some 40 drug companies and contract test facilities to "evaluate current practice" in the light of the proposed regulations.

The proposed standards are, in fact, not unduly burdensome. But at least they provide FDA with a basis for inspecting the industry's laboratories and maintaining some control over toxicity testing methods, safeguards which have been lacking in the past.

An important feature of the proposed regulations is that they specify a number of sanctions that FDA would impose if it discovers that the standards are being violated. The sanctions would range from a warning, to the withdrawal of a product from the market if FDA discovers that it had been approved on the basis of faked or misleading toxicity reports. Gross violations of the regulations would also cause FDA to disqualify that particular facility from submitting test reports on other drugs or food additives.

Though the proposed regulations would at least tighten up some of the shoddier work which is being done by the drug industry, they offer only a partial solution to the problem. Virtually all the disquieting incidents which have come to light so far have surfaced through the diligent work of a few highly trained toxicologists and other specialists in animal testing. FDA, with its limited budget and even more limited research resources, has far too few such people on its payroll.

What is needed is an infusion of funds, in addition to the $16.4 million appropriated for the inspection program, to hire good people to conduct thorough checks of the toxicity reports submitted by the industry, and to launch more investigations when FDA has reason to be suspicious.

Last year, Kennedy introduced a bill which, among other things, consolidated the research functions of FDA in one location and provided funds to hire researchers on relatively short-term appointments from academia. The idea was to make FDA a more attractive place for qualified researchers. The bill did not progress much last year, but something like it is clearly needed to beef up the scientific standing of FDA.

(FDA's proposed regulations are open for public comment for 120 days and will be the subject of public hearings early next year. They are published in the *Federal Register,* November 19, 1976). —CN

Letter to the Editor

Your November 15 article "Carter Faces Major Decisions on Nuclear Power" states that President-elect Carter's policy on plutonium reprocessing has yet to be stated explicitly. I believe that the following first three "steps" promised in his September 25 address at San Diego are quite explicit:

"As President, I will take the following (ten) steps to control further nuclear proliferation:

"1. I will call upon all nations to adopt a voluntary moratorium on the national sale or purchase of enrichment or reprocessing plants — a moratorium which should apply retroactively to the recent German-Brazilian and the French-Pakistan agreements.

"2. I will make no new commitments for the sale of nuclear technology or fuel to countries which refuse to forego nuclear explosives, to refrain from national nuclear reprocessing, and to place their nuclear facilities under IAEA safeguards.

"3. I will seek to withhold authority for domestic commercial reprocessing until the need for, the economics, and the safety of this technology is clearly demonstrated. If we should ever decide to go forward with commercial reprocessing, it should be on a multinational basis."

Felix Rosenthal
Annandale, Virginia

Flaws in EPA Monitoring Threaten Clean Air Amendments

When Congress passed the Clean Air Act in 1970, it established a framework for regulating air pollutants on the basis of their likely effects on human health. At that time, information linking levels of pollutants to health effects was sparse, but it was confidently expected that the necessary data would emerge from a largescale research effort then underway by the Environmental Protection Agency. EPA has since spent some $22 million on the research, but a Congressional investigation last month concluded that the data produced so far are useless.

The upshot is that EPA's air pollution standards continue to rest on an insubstantial scientific base, a fact which industrial lobbyists will find advantageous when Congress considers amendments to the Clean Air Act early next year.

The faulty research program, known as CHESS (Community Health and Environmental Surveillance System), was begun in the late 1960s and grew into a massive 5-year undertaking in 1970. It was an attempt to monitor concurrently air pollution levels in six cities and the incidence of various health problems, such as respiratory disorders, eye irritation, and so on. It was the first major attempt to look for data linking specific low-pollutant levels to health effects.

Though the program encountered many problems, EPA published the first results, covering information gathered between 1969 and 1971, in the form of a monograph in 1974. It purported to show a correlation between low levels of sulphur dioxide in the atmosphere and problems such as increased incidence of asthma. But the monograph soon ran into scientific criticism of its methodology and of the analysis of the data, and the matter became a source of embarrasement to EPA last February when the Los Angeles *Times* published a story claiming that the monograph's conclusions had been deliberately distorted to buttress EPA's regulations.

The allegations immediately sent industrial lobbyists to Capitol Hill to demand a freeze on the implementation of new air-pollutant regulations, and a full-scale investigation by two House subcommittees, aided by various ad-hoc consultants, was begun.

The investigation, steered by Rep. George E. Brown Jr. (D-Calif.), chairman of the subcommittee on the environment and the atmosphere of the House Committee on Science and Technology, turned up findings that the CHESS study was poorly executed, and that EPA officials were pushing hard for early results from a program which was incapable of providing them. The investigation concluded that "it was not difficult to identify many deficiencies in the CHESS program or to relate these difficulties to the need for changes in the organization and management within EPA."

One of the major scientific problems was that the methods used to detect sulphur pollutants were too insensitive to pick up very low levels, and some of the measurements which were obtained were subject to errors of more than 100 per cent Noting this, Brown said in a statement last month that "the CHESS results published to date have virtually no quantitative value."

The investigation turned up no evidence that the conclusions in the monograph had been deliberately distorted, but the report notes that EPA officials were anxious to obtain results from the program as swiftly as possible to provide the agency with a solid base for its regulations. The results of the investigation "present a picture of a program pressured by EPA management-imposed time constraints to meet legislated mandates for promulgating new standards," the report states.

The monograph is the only publication to emerge from the CHESS study so far, but the rest of the data is still being analyzed. The report states, however, that "there is serious doubt that the analysis even when completed will ever be sufficiently credible to support the stated objectives of the program."

Congress is scheduled to consider amendments to the Clean Air Act early in the new session, and it is already facing economic blackmail from the automobile indus-

(Continued on Page 6)

SGR Poll Produces a Dud

SGR's venture into querying its readers on fakery in research (Vol. VI, No. 16) drew too sparse a return — a mere 17 from a subscription list of about 1750 — to justify any sound conclusions. But for what it's worth, which is not much, 13 of the respondents answered "yes" to the question, "Do you know of or suspect intentional bias?" Four replied "no"; all the respondents are over age 30, eight are in the 50-59 age range, and all indicated that they hold senior research or administrative posts. Answers to other parts of the 12-item questionnaire were too widely distributed to allow for easy summary.

The questionnaire was taken from the British weekly *New Scientist* of September 2. That journal, which has about 70,000 subscribers, reports in its November 25 issue on the 204 responses that it received. Five of these were considered "spoiled," according to *New Scientist,* among them one that "purported to come from a laboratory rat, one from an inspector of custard pie stability, and one from a 'whange cleaner.'"

SGR herewith drops out of the polling game.

Joint Atomic Committee Flayed in Common Cause Study

With a fine sense of timing, Common Cause, the "citizens lobby," has produced an indictment of the once-powerful Congressional Joint Committee on Atomic Energy (JCAE), accusing it of "procedural abuses," conflict of interest, and failure to examine key nuclear problems. The study was published with considerable publicity on December 1, just as Congressional critics of the JCAE were gearing up for a two-pronged attempt in the House and Senate to strip the Committee of its legislative powers (SGR Vol. VI, No. 19).

The Common Cause study is a detailed analysis of the JCAE's record over the past 30 years, and it comes up with the oft-repeated conclusion that the Committee has been persistently pro-nuclear and has failed to maintain proper control over the nuclear power program. It breaks some new ground, however, in trying to explain the reasons for the Committee's biases.

According to the study, the Committee "is dominated by representatives who have a vested interest in encouraging increased nuclear spending." Last session, 12 of the Committee's 18 members represented six states which together received more than half of the Energy Research and Development Administration's funds in fiscal years 1976 and 1977.

"The relationships between nuclear funding patterns, nuclear facility location and membership on the JCAE can hardly be seen as accidental," Common Cause asserts. It continues: "The presence of large federal nuclear installations in the districts of members of the JCAE has led to the development of a legislative committee with a record of supporting increased nuclear expenditures while shutting out those who criticize nuclear power or favor the development of other energy sources."

Common Cause ticks off a list of projects which the JCAE has attempted to keep alive, in spite of sizable cost overruns, abandoning them only after they have "totally failed to work." They include the nuclear airplane, which cost $1.5 billion, the pluto nuclear bomb, and a nuclear rocket, NERVA, which cost about $1.5 billion.

As for the JCAE's failure to examine issues which cast doubt on nuclear power, and its failure to invite nuclear critics to testify at many of its hearings, Common Cause notes that in the past 23 years, the JCAE has heard 2531 government witnesses, 1091 witnesses from industry, and only 98 witnesses from public-interest groups.

In its inquiry into the implications of a fire at a nuclear plant in Browns Ferry, Alabama, the JCAE held hearings at which representatives from the utility operating the plant and the Nuclear Regulatory Commission testified and "downplayed the broad safety concerns." Though the JCAE accounced that hearings would be held to accommodate other views on the incident, no such hearing have been held, Common Cause asserts. Similarly, Common Cause notes that in spite of assurances from the JCAE chairman, no critics of the pro-nuclear Rasmussen Report on reactor safety have been invited to testify before the JCAE since the full report was published.

Such happenings are, of course not uncommon. Members of other committees frequently handle legislation affecting facilities and programs in their districts, and committees often fail to hear testimony on all sides of an issue. But what makes the JCAE so objectionable is the fact that it has a virtual monopoly over nuclear legislation. It is the only Congressional joint committee with legislative powers, which means that every piece of legislation on nuclear issues is channeled to it. Other

(Continued on Page 7)

CLEAN AIR *(Continued From Page 5)*

try. At present, the Clean Air Act specifies relatively strict exhaust standards for 1978 model cars, and last session the automobile industry tried to persuade Congress to relax them. Congress failed to reach agreement, however, leaving the strict standards in place. The industry is already gearing up to produce 1978 models which do not meet the standards, however, thereby presenting Congress with the choice of either shutting down many plants or amending the standards to conform to Detroit's wishes.

Thus, when Congress takes up the Clean Air Act, it will not only have Detroit lobbyists breathing down its neck, forecasting economic disaster unless pollutant regulations are relaxed, but it will also be invaded by lobbyists from the coal industry, power companies, and other purveyors of sulphur pollutants, arguing that EPA's regulations have no scientific justification.

It should be noted, however, that the Congressional report on the CHESS study specifically points out that though the results do not provide detailed support for the regulations, they at least "corroborate the notion that elevated air pollution levels cause adverse health effects." In other words, failure of the program does not provide any justification for relaxing the standards.

(The Congressional report, "The Environmental Protection Agency's Research Program, with primary emphasis on CHESS: an investigative report," is available from the Committee on Science and Technology, Rayburn Building, House of Representatives, Washington DC 20515.) —CN

...JCAE Put Out Welcome Only for Pro-Nuclear Forces

(Continued From Page 6)

matters are handled by separate House and Senate committees.

Its unique position allows the JCAE to maintain a stranglehold on nuclear legislation, considering only those bills it favors and neglecting others. Last year, for example, it conducted hearings on only three out of 85 bills submitted by non-members of the JCAE. By contrast, it held hearings on 29 out of 50 bills proposed by its own members.

Furthermore, because the Committee operates for both the House and the Senate, it can orchestrate the passage of legislation in a way no other committee can. Last year, it approved funds for construction to begin on a demonstration liquid metal fast breeder reactor (LMFBR) and whipped the bill through the House and Senate before four important studies of the LMFBR program were completed.

The House Democratic caucus last week considered a resolution introduced by Rep. Jonathan Bingham (D-NY) to strip the JCAE of its legislative powers in the House and to reassign its responsibilities to four House committees. The Senate will take up the matter next month when it discusses a reorganization plan drafted by a special select committee last September (SGR Vol. VI, No. 19).

(The Common Cause Study, "Stacking the Deck," is available without charge from Common Cause, 2030 M St. NW, Washington DC 20036.)

In Print

Priorities and Efficiency in Federal Research and Development, consisting of five papers, some of them penetrating and illuminating, submitted to the Congressional Joint Economic Committee, at the invitation of a subcommittee chaired by Senator William Proxmire (D-Wisc.). Authors are: Lester Thurow, MIT; Louis Fisher, Library of Congress; Albert H. Rubenstein, Northwestern University; William D. Carey, AAAS, and Edwin Mansfield, University of Pennsylvania. Particularly valuable is Fisher's analysis of the shell-game that the Defense Department plays with Congress in promoting R&D ventures. (115 pages, available without charge, from the Joint Economic Committee, Room G-133, Dirksen Senate Office Building, Washington, DC 20510).

SGR Almanac—At Pre-Publication Price

Pre-publication orders, at a substantially reduced price, are now being accepted for the SGR *International Almanac — 1977.* The *Almanac* is a unique publication that will contain reviews of science-policy developments in a score of industrialized nations. Written by senior science journalists and academics, these articles will review the status and trends of scientific priorities, programs, budgets, and policy-making agencies.

In addition, the *Almanac* will contain a nation-by-nation directory of government science agencies and organizations, plus the complete texts of many major science-policy documents issued in 1976.

The *Almanac* will cover approximately 300 pages and will be issued in a high-quality, hard-bound edition.

Delivery is scheduled for March 1977, at which time the price will be $75 per copy.

Pre-publication orders will be at the price of $44 per copy.

To place your order, please use the coupon below:

SGR International Almanac, Northwest Station, Box 6226, Washington, DC 20015.

Please enter my pre-publication order for SGR *International Almanac* — 1977 at the reduced charter price of $44.

Number of copies desired (at $44 each) _____

Enclosed is a check for _____; please bill me _____

Name _____

Address _____ Zip _____

Make checks payable to SGR International Almanac

GAO Provides More Bad News for Fast Breeder Reactor

The liquid metal fast breeder reactor (LMFBR), faced by a Carter campaign pledge of a lowered priority and possible conversion to a multinational effort, received some more bad news recently.

The General Accounting Office (GAO), an investigative agency of the Congress, has produced a report which raises doubts about the LMFBR's commercial viability; GAO also notes that pending decisions on other technologies, such as whether to allow commercial reprocessing of fuel from light water reactors, will have a critical impact on the breeder program.

Though the report does not come down on either side of the debate over whether or not the LMFBR should continue to be the highest priority, most costly energy research and development effort, it contains a lot of material which could be useful to the anti's. GAO estimates, for example, that the cost of building 128 LMFBRs (the number which the Energy Research and Development is using in its planning estimates for a commercial LMFBR operation) would amount to about $150 billion. The capital cost of coal plants of the same total capacity would be $95 billion, GAO reckons. The report, therefore, concludes that the cost of commercial introduction of LMFBRs "would pose a formidable barrier to electric utilities."

The GAO study also notes that the success of the LMFBR program depends heavily on a number of fuel-cycle technologies, particularly the reprocessing of spent fuel to separate out plutonium, and the fabrication of reactor fuel containing a mixture of plutonium and uranium. "If any degree of LMFBR commercialization is to occur before the end of this century, R&D for fuel cycle technologies, in particular, fuel fabrication, and reprocessing, will have to be accelerated," GAO argues. President-elect Carter has indicated, however, that instead of accelerating such technologies, he will probably refuse to allow them to proceed, at least until safeguards and proliferation issues have been dealt with satisfactorily.

(The GAO report, "Considerations for Commercializing the Liquid Metal Fast Breeder Reactor," No. EMD-77-5, is available from GAO, Washington, DC 20548, for $1)

Science & Government Report
Northwest Station
Box 6226A
Washington, D.C. 20015

Second class postage paid at Washington, D.C.

SGR Holiday Schedule

The next issue of *Science & Government Report* will be published January 15, 1977.